US-PAT-NO: 6564263

DOCUMENT-IDENTIFIER: US 6564263 B1

TITLE: Multimedia content description framework

DATE-ISSUED: May 13, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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APPL-NO: 09/ 456031

DATE FILED: December 3, 1999

PARENT-CASE:

This application claims priority to U.S. Provisional Application Serial No. 60/110,902, filed on Dec. 4, 1998.

US-CL-CURRENT: 709/231, 707/101 , 707/104.1 , 707/3 , 709/232 , 715/500.1

ABSTRACT:

A framework is provided for describing multimedia content and a system in which a plurality of multimedia storage devices employing the content description methods of the present invention can interoperate. In accordance with one form of the present invention, the content description framework is a description scheme (DS) for describing streams or aggregations of multimedia objects, which may comprise audio, images, video, text, time series, and various other modalities. This description scheme can accommodate an essentially limitless number of descriptors in terms of features, semantics or metadata, and facilitate content-based search, index, and retrieval, among other capabilities, for both streamed or aggregated multimedia objects.

2 Claims, 19 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 19

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Detailed Description Text - DETX (50):

which may define a **color histogram in a different color space**. Assuming the new color space is derived from the RGB color space, then myhist may be obtained via a transformation, F, of rgbhist, which may be represented as myhist=F(rgbhist).

US-PAT-NO: 6411724

DOCUMENT-IDENTIFIER: US 6411724 B1

TITLE: Using meta-descriptors to represent multimedia information

DATE-ISSUED: June 25, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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APPL-NO: 09/ 347214

DATE FILED: July 2, 1999

US-CL-CURRENT: 382/100, 382/190 , 382/225 , 707/104.1

ABSTRACT:

Multimedia information retrieval is performed using meta-descriptors in addition to descriptors. A "descriptor" is a representation of a feature, a "feature" being a distinctive characteristic of multimedia information, while a "meta-descriptor" is information about the descriptor. Meta-descriptors are generated for multimedia information in a repository (10, 12, 14, 16, 18, 20, 22, 24) by extracting the descriptors from the

multimedia information (111),
clustering the multimedia information based on the descriptors (112), assigning
meta-descriptors to each cluster (113), and attaching the meta-descriptors to
the multimedia information in the repository (114). The multimedia repository
is queried by formulating a query using
query-by-example (131), acquiring the descriptor/s and meta-descriptor/s for a repository
multimedia item (132),
generating a query descriptor/s if none of the same type has been previously
generated (133, 134), comparing the descriptors of the repository multimedia
item and the query multimedia item (135), and ranking and displaying the
results (136, 137).

6 Claims, 4 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 2

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Detailed Description Text - DETX (13):
Another form is string notation, which is capable of handling not only
different weights but also different extraction algorithms and sectioning of
the still image into multiple blocks. Moreover, the string representation
allows for new features to be considered in the meta-descriptor later in time.
In string notation, each character or group of characters in the string
indicates the relevance of a feature given a set of

features in accordance with a predefined standard notation. Consider, for example, a set of four valid color descriptor types: (1) a single histogram for an entire image in RGB color space; (2) twenty-five **histograms for the image in RGB color** space that is divided into a 5.times.5 grid, each of the resulting twenty-five blocks being represented by a histogram; (3) a single histogram for the entire image in YUV color space; and (4) twenty-five **histograms for the image in YUV color** space that is divided into a 5.times.5 grid, each of the resulting twenty-five blocks being represented by a histogram. Assume that these descriptor types are numerically ordered from 1 to "n," n being the number of valid descriptor types, here four. A suitable string meta-descriptor for a still image that is best described by, for example, the first and fourth color descriptors is "C214" meaning: the color feature is relevant (C) and is obtained with two (2) color representations from a pre-defined set of color representations, namely the first and fourth (14) color representations from the pre-defined set of color representations. String notation is particularly flexible, allowing not only **different color spaces** (for example, RGB and YUV) to be identified but also allowing each color space to be calculated differently (for example, as one block, a set of ten blocks, a set of 100 blocks, and so forth). Extensions of string notation can also handle different extraction algorithms by appropriate predefined codes.